

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1-21 (Canceled)

Claim 22 (Withdrawn): A method of making an interconnection apparatus, said method comprising:

- forming a plurality of contact structures on a sacrificial substrate;
- attaching said plurality of contact structures to a first substrate; and
- attaching said first substrate to a second substrate,

wherein said second substrate is larger than said first substrate.

Claim 23 (Withdrawn): The method of claim 22, wherein said step of attaching said plurality of contact structures to a first substrate comprises:

- attaching first portions of said contact structures to said first substrate while second portions of said contact structures are attached to said sacrificial substrate; and
- releasing said second portions of said contact structures from said sacrificial substrate.

Claim 24 (Withdrawn): The method of claim 23, wherein said second portions of said contact structures comprise contact tips.

Claim 25 (Withdrawn): The method of claim 24, wherein said step of forming a plurality of contact structures comprises:

- forming said contact tips on said sacrificial substrate; and
- forming said contact structures on said contact tips.

Claim 26 (Withdrawn): The method of claim 24, wherein said contact tips are textured.

Claim 27 (Withdrawn): The method of claim 22, wherein said first substrate comprises a plurality of first terminals on a first side thereof, and wherein said step of attaching said plurality of contact structures to a first substrate comprises attaching said plurality of contact structures to said first terminals.

Claim 28 (Withdrawn): The method of claim 27, wherein said first substrate further comprises a plurality of second terminals on a second side thereof, ones of said first terminals and ones of said second terminals being electrically connected, and wherein said step of attaching said first substrate to a second substrate comprises electrically connecting ones of said second terminals with ones of a plurality of third terminals on a first side of said second substrate.

Claim 29 (Withdrawn): The method of claim 28, wherein said second substrate further comprises:

- a plurality of fourth terminals on a second side thereof, and
- a plurality of interconnections through said second substrate electrically connecting ones of said third terminals with ones of said fourth terminals.

Claim 30 (Withdrawn): The method of claim 22 further comprising:

- attaching a plurality of said contact structures to a plurality of said first substrates; and
- attaching said plurality of first substrates to said second substrate.

Claim 31 (Withdrawn): The method of claim 22, wherein each of said contact structures comprises a wire.

Claim 32 (Withdrawn): The method of claim 31, wherein each of said contact structures further comprise an overcoat enveloping at least a portion of said wire.

Claim 33 (Withdrawn): The method of claim 32, wherein said overcoat comprises a material having a greater yield strength than said wire.

Claim 34 (Previously presented): An interconnection apparatus comprising:

- a first substrate;
- a plurality of contact structures attached to said first substrate; and
- a second substrate comprising:
 - a plurality of first terminals on a first side thereof,
 - a plurality of second terminals on a second side thereof, said second side opposite said first side, and
 - a plurality of interconnections through said second substrate electrically connecting ones of said first terminals with ones of said second terminals;
- wherein said first substrate is attached to said second substrate, and ones of said contact structures are electrically connected to ones of said first terminals.

Claim 35 (Previously presented): The interconnection apparatus of claim 34, wherein said first terminals are disposed in a first pattern on said first side of said second substrate, and said second terminals are disposed in a second pattern on said second side of said second substrate, and wherein said first pattern is different than said second pattern.

Claim 36 (Previously presented): The interconnection apparatus of claim 35, wherein said first terminals in said first pattern are in a tighter pitch than said second terminals in said second pattern.

Claim 37 (Previously presented): The interconnection apparatus of claim 34 further comprising an electrical interface to a semiconductor tester, wherein ones of said second terminals are electrically connected to said interface.

Claim 38 (Previously presented): The interconnection apparatus of claim 37 further comprising a probe card, wherein said probe card comprises said interface.

Claim 39 (Previously presented): The interconnection apparatus of claim 34 further comprising a plurality of said first substrates.

Claim 40 (Previously presented): The interconnection apparatus of claim 39, wherein said plurality of contact structures are for contacting dice of a semiconductor wafer.

Claim 41 (Previously presented): The interconnection apparatus of claim 40, wherein each said first substrate corresponds to one of said dice.

Claim 42 (Previously presented): The interconnection apparatus of claim 40, wherein each said first substrate corresponds to a plurality of said dice.

Claim 43 (Previously presented): The interconnection apparatus of claim 40, wherein contact structures are attached to each said first substrate in a pattern that corresponds to a pattern of contacts on one of said dice.

Claim 44 (Previously presented): The interconnection apparatus of claim 40, wherein contact structures are attached to each said first substrate in a pattern that corresponds to a pattern of contacts on at least two of said dice.

Claim 45 (Previously presented): The interconnection apparatus of claim 40, wherein contact structures are attached to each said first substrate in a pattern that corresponds to a partial pattern of contacts on one of said dice and a partial pattern of contacts on an adjacent die.

Claim 46 (Previously presented): The interconnection apparatus of claim 34, wherein each of said contact structures comprises a wire.

Claim 47 (Previously presented): The interconnection apparatus of claim 46, wherein each of said contact structures further comprise an overcoat enveloping at least a portion of said wire.

Claim 48 (Previously presented): The interconnection apparatus of claim 47, wherein said overcoat comprises a material having a greater yield strength than said wire.

Claim 49 (Withdrawn): A method of making an interconnection apparatus, said method comprising:

- providing a first substrate comprising a plurality of contact structures attached thereto;

- providing a second substrate comprising:

- a plurality of first terminals on a first side thereof,

- a plurality of second terminals on a second side thereof, said second side opposite said first side, and

- a plurality of interconnections through said second substrate electrically connecting ones of said first terminals with ones of said second terminals; and

- attaching said first substrate to said second substrate, such that ones of said contact structures are electrically connected to ones of said first terminals.

Claim 50 (Withdrawn): The method of claim 49, wherein said step of providing a first substrate comprises forming said contact structures on said first substrate.

Claim 51 (Withdrawn): The method of claim 50, wherein said step of providing a first substrate further comprises attaching tips to said contact structures.

Claim 52 (Withdrawn): The method of claim 49, wherein said step of providing a first substrate comprises:

- forming said plurality of contact structures on a sacrificial substrate;

- attaching said plurality of contact structures to said first substrate; and

- releasing said plurality of contact structures from said sacrificial substrate.

Claim 53 (Withdrawn): The method of claim 52, wherein said step of forming said plurality of contact structures comprises:

- forming said contact tips on said sacrificial substrate; and

- forming said contact structures on said contact tips.

Claim 54 (Withdrawn): The method of claim 53, wherein said contact tips are textured.

Claim 55 (Withdrawn): The method of claim 49 further comprising:

providing a plurality of said first substrates; and
attaching said plurality of first substrates to said second substrate.

Claim 56 (Withdrawn): The method of claim 49, wherein said first terminals are disposed in a first pattern on said first side of said second substrate, and said second terminals are disposed in a second pattern on said second side of said second substrate, and wherein said first pattern is different than said second pattern.

Claim 57 (Withdrawn): The method of claim 56, wherein said first terminals in said first pattern are in a tighter pitch than said second terminals in said second pattern.

Claim 58 (Withdrawn): The method of claim 49 further comprising electrically connecting ones of said second terminals to an interface to a semiconductor tester.

Claim 59 (Withdrawn): The method of claim 58 further comprising providing a probe card, wherein said probe card comprises said interface.

Claim 60 (Withdrawn): The method of claim 49, wherein each of said contact structures comprises a wire.

Claim 61 (Withdrawn): The method of claim 60, wherein each of said contact structures further comprise an overcoat enveloping at least a portion of said wire.

Claim 62 (Withdrawn): The method of claim 62, wherein said overcoat comprises a material having a greater yield strength than said wire.

Claim 63 (Previously presented): An interconnection apparatus comprising:

a first substrate comprising:
a plurality of contact structures attached to a first side of said first substrate;

a plurality of first terminals on a second side of said first substrate, said second side opposite said first side, and

a plurality of interconnections through said first substrate electrically connecting ones of said contact structures with ones of said first terminals; and

a second substrate comprising a plurality of second terminals;

wherein said first substrate is attached to said second substrate, and ones of said first terminals are electrically connected to ones of said second terminals.

Claim 64 (Previously presented): The interconnection apparatus of claim 63 further comprising a plurality of said first substrates.

Claim 65 (Previously presented): The interconnection apparatus of claim 63, wherein said plurality of contact structures are for contacting dice of a semiconductor wafer.

Claim 66 (Previously presented): The interconnection apparatus of claim 65, further comprising a plurality of said first substrates, wherein each said first substrate corresponds to one of said dice.

Claim 67 (Previously presented): The interconnection apparatus of claim 65, further comprising a plurality of said substrates, wherein each said first substrate corresponds to a plurality of said dice.

Claim 68 (Previously presented): The interconnection apparatus of claim 63, wherein each of said contact structures comprises a wire.

Claim 69 (Previously presented): The interconnection apparatus of claim 68, wherein each of said contact structures further comprise an overcoat enveloping at least a portion of said wire.

Claim 70 (Previously presented): The interconnection apparatus of claim 69, wherein said overcoat comprises a material having a greater yield strength than said wire.

Claim 71 (Withdrawn): A method of making a semiconductor device, said method comprising:

- providing a semiconductor device; and
- providing a probing device comprising:
 - a first substrate;
 - a plurality of contact structures attached to said first substrate; and
 - a second substrate comprising:
 - a plurality of first terminals on a first side thereof,
 - a plurality of second terminals on a second side thereof, said second side opposite said first side, and
 - a plurality of interconnections through said second substrate electrically connecting ones of said first terminals with ones of said second terminals;

wherein said first substrate is attached to said second substrate, and ones of said contact structures are electrically connected to ones of said first terminals;

contacting said semiconductor device with ones of said contact structures; and

testing said semiconductor device.

Claim 72 (Withdrawn): The method of claim 71 further comprising a plurality of said first substrates.

Claim 73 (Withdrawn): The method of claim 71, wherein said semiconductor device comprises a semiconductor die.

Claim 74 (Withdrawn): The method of claim 73, wherein said semiconductor die is resident on an unsingulated semiconductor wafer.

Claim 75 (Previously presented): A semiconductor device made using the method of claim 71.

Claim 76 (Withdrawn): A method of making a semiconductor device, said method comprising:

- providing a semiconductor device; and
- providing a probing device comprising:
 - a first substrate comprising:

a plurality of contact structures attached to a first side of said first substrate,

a plurality of first terminals on a second side of said first substrate, said second side opposite said first side, and

a plurality of interconnections through said first substrate electrically connecting ones of said contact structures with ones of said first terminals; and a second substrate comprising a plurality of second terminals;

wherein said first substrate is attached to said second substrate, and ones of said first terminals are electrically connected to ones of said second terminals; contacting said semiconductor device with ones of said contact structures; and testing said semiconductor device.

Claim 77 (Withdrawn): The method of claim 76 further comprising a plurality of said first substrates.

Claim 78 (Withdrawn): The method of claim 76, wherein said semiconductor device comprises a semiconductor die.

Claim 79 (Withdrawn): The method of claim 78, wherein said semiconductor die is resident on an unsingulated semiconductor wafer.

Claim 80 (Previously presented): A semiconductor device made using the method of claim 76.